F·A·A·M facility for airborne atmospheric measurements

FLIGHT FOLDER

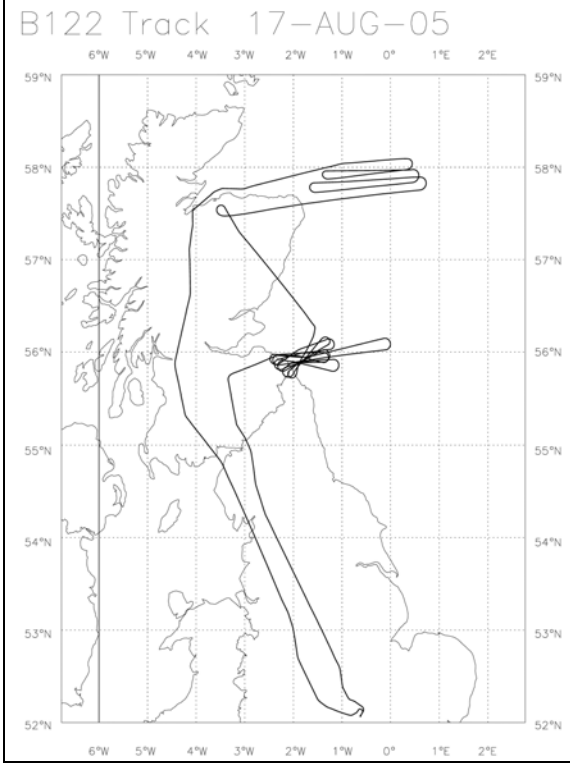
Flight No.:	B122	
Date:	17 Aug 2005	
Take Off	08:02:23	14:58:58
Landing:	13:18:40	16:08:07
Flight Time	5h16m17	1h09m09

Campaign: CLOPAP

Operating Area: N Sea, Scotland

POB	Position	Name	Institute
1	Captain	Alan Foster	Directflight
2	Co-pilot	Alan Roberts	Directflight
3	CCM	Gaynor Ottaway	Directflight
4	Mission Scientist	Keith Bower	Manchester University
5	Flight Manager	Alan Woolley	FAAM
6	Cloud Physics	Martin Pickering	Met Office
7	CVI/CCN	Paul James	FAAM
8	PTRMS	Jennifer Murphy	UEA
9	CPI	Martin Gallagher	Manchester University
10	AMS	Gerard Capes	Manchester University
11	Core Chem / CCM2	Ruth Purvis	FAAM
12	NOxy	Dave Stewart	UEA
13	WAS	Maria Nielsdottir	UEA
14			
15			
16			
17			
18			
19			
20			

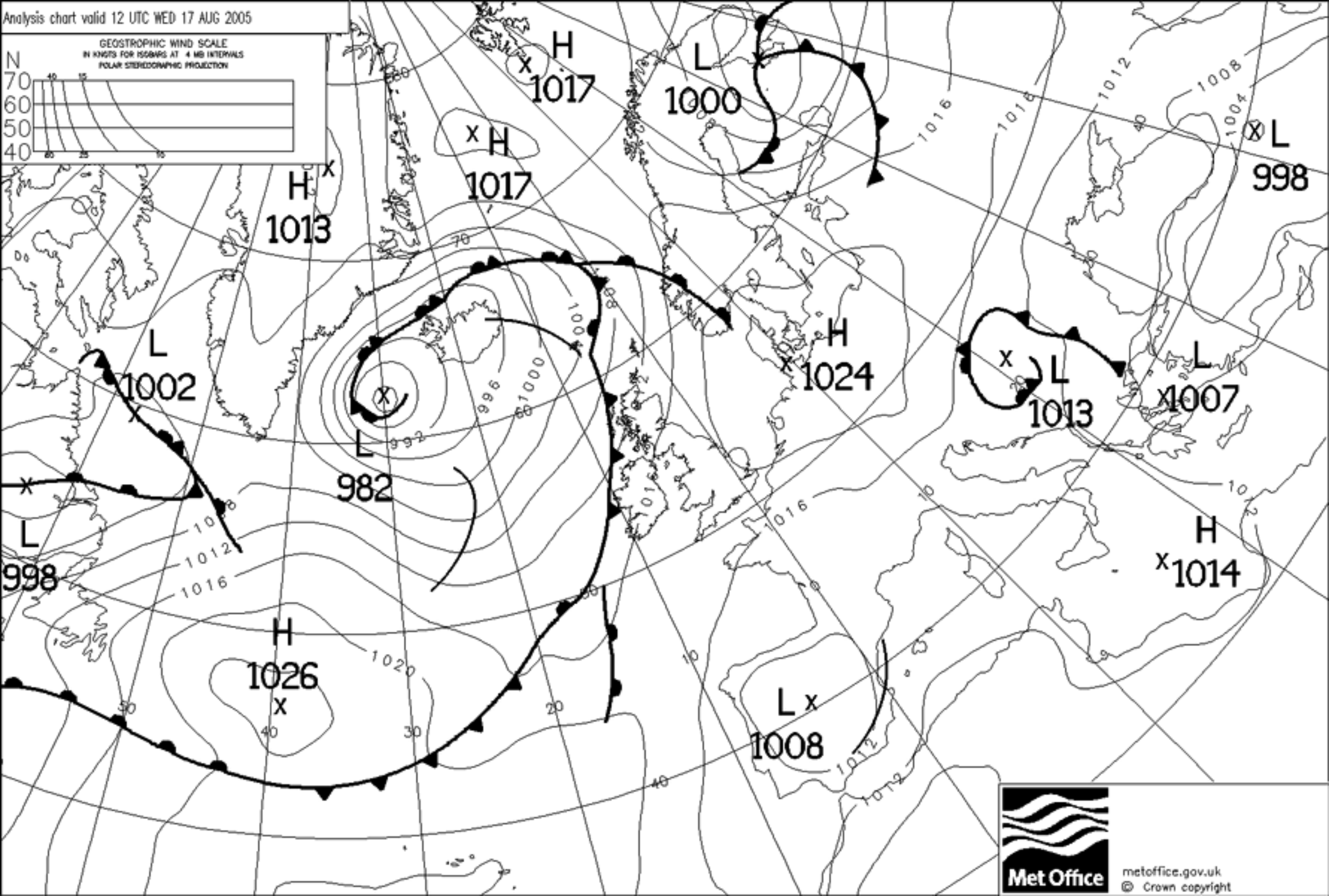
Flight Track:



FLIGHT SUMMARY

Flight No b122
Date: 17/8/05
Project: Cirrus
Location: N Sea, Scotland

Start Time	End Time	Event	Height (s)	Hdg	Comments
075022		inu to nav	0.14 kft	126	
075543		taxy start	0.14 kft	126	
080223		T/O	0.13 kft	032	from cranfield
080540		jw/nevz zero	5.2 kft	300	
080616		asp open	6.3 kft	289	
090140	092428	Profile 1	18.0 - 30.0 kft	090	start FL180
090621		Profile 1	23.0 kft	090	interrupt
090844		Profile 1	23.0 kft	279	resume
091541		Profile 1	27.0 kft	270	interrupt
091823		contrails	27.0 kft	063	
091841		no contr	27.0 kft	056	
091904		Profile 1	27.0 kft	056	resume
092951	093403	Run 1	27.0 kft	263	
093756	094846	Run 2	28.0 kft	078	
095125	100513	Run 3	29.1 - 29.0 kft	257	
100744	101243	Run 4.1	28.1 - 28.0 kft	085	
101545	102050	Run 4.2	28.0 kft	241	
102357	102925	Run 5.1	27.0 kft	101	
102543		contrail	27.0 kft	107	brief puffs as enteri ng cloud
103219	103822	Run 5.2	27.0 kft	265	
104120	104623	Run 6	25.0 kft	026	
104846	105523	Run 7	23.0 kft	241	
105916	110419	Run 8	19.0 kft	024	
111833	114902	Profile 2	18.0 - 35.0 kft	311	
112458		Profile 2	25.0 kft	321	interrupt
112814		Profile 2	25.0 kft	095	resume
114958		contrails	35.0 kft	013	
115128	120325	Run 9	35.1 - 35.0 kft	267	
120628	121544	Run 10	33.1 - 33.0 kft	090	
120718		contrails stopped	33.1 kft	088	
121035		contrails	33.0 kft	087	
121057		con stopped	33.0 kft	087	
121826	122934	Run 11	29.0 kft	261	
123213	124010	Run 12	27.1 - 27.0 kft	090	
124307	125100	Run 13	24.0 kft	265	
130408		asp closed	15.0 kft	251	
131840		Land	0.05 kft	233	at Inverness
132156		standstill	0.08 kft	093	57'32.45N, 4'03.73W
145858		T/O	0.06 kft	229	From Inverness
150418		asp open	11.4 kft	192	
155313		asp closed	22.0 kft	153	
160807		Land	0.22 kft	209	at Cranfield
161106		standstill	0.24 kft	310	52'04.36N, 0'37.50W


Analysis chart valid 12 UTC WED 17 AUG 2005
GEOSTROPHIC WIND SCALE
IN KNOTS FOR ISOBARS AT 4 MB INTERVALS
POLAR STEREOGRAPHIC PROJECTION
N
70
60
50
40
H
1017
L
1000
H
1017
H
1013
L
998
L
1002
L
982
H
1024
L
1013
L
1007
L
998
H
1014
H
1026
L
1008
1016
1012
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1004
1000
996
992
1020
1012
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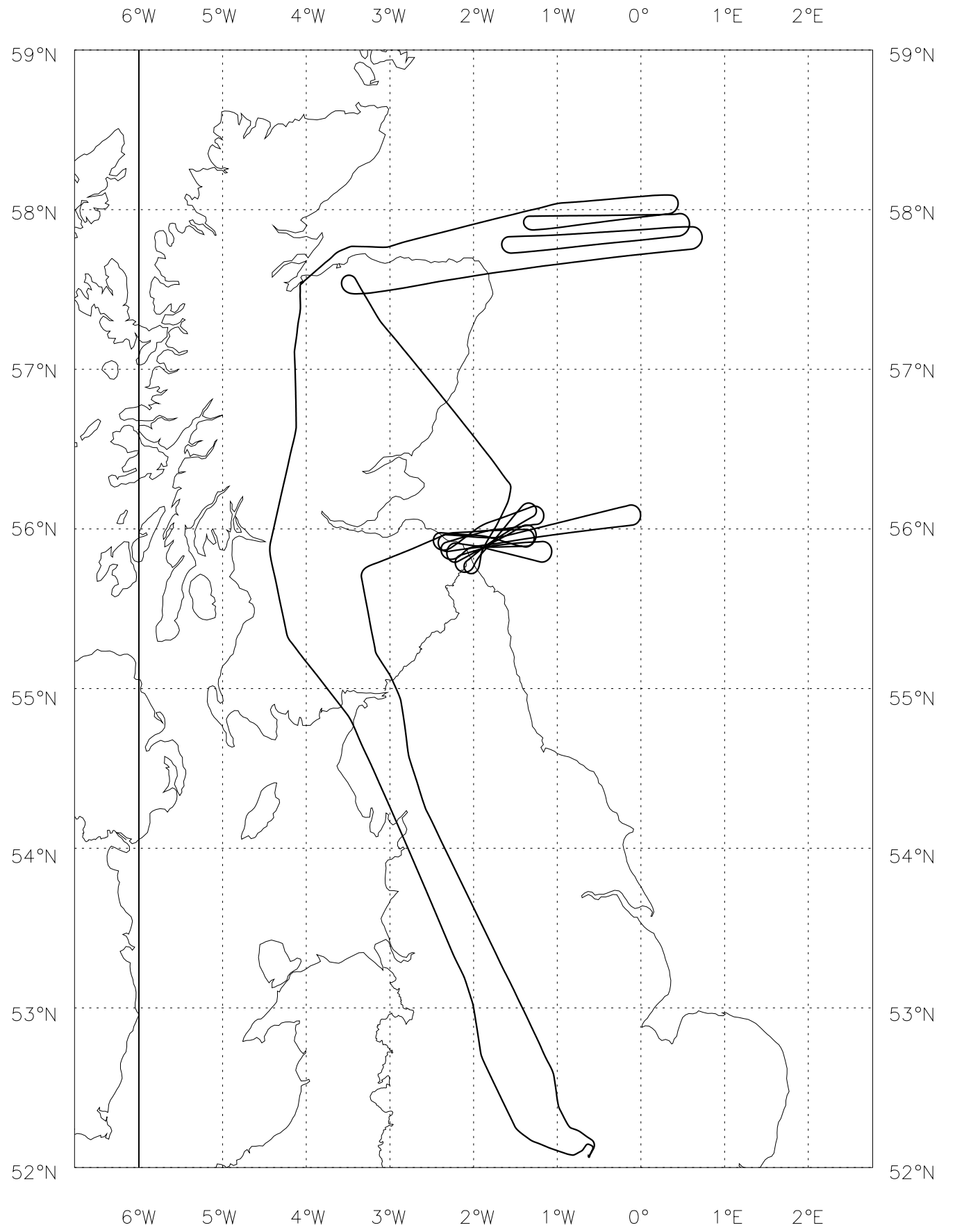
B122 Track 17-AUG-05



Sortie Brief UTLS Cirrus 8 : Cirrus cloud microphysics and chemistry
Option 2 (Wave-cloud Cirrus)

Flight Number B122
Date 17 July 2005 **Mission Scientist: Keith Bower**

Sortie Aims: To make measurements of the microphysics of cirrus clouds and their interaction with local aerosol and oxides of nitrogen. To investigate the effects of precipitation from the cloud on the vertical distribution of aerosol and oxidized nitrogen

Sortie Location: In layers of cirrus wave cloud over N.Scotland to the north of the Edinburgh/Glasgow region (Back-up region: in Ci to the NE of Scotland)

Sortie Summary: In orographic wave cloud cirrus. These will be used as a natural flow through reactor to study changes in the aerosol and trace gas composition, particularly focussing on oxides of nitrogen and nitrate. Initially a profile will be flown up wind of the cloud to assess the vertical structure of the atmosphere with respect to trace gases and aerosol properties. Straight and level runs will then be made along the wind, above within and below the wave clouds. These runs will cover the full horizontal extent of the cloud and will enable us to investigate both the microphysical evolution of the cloud and the influence of the cloud on the aerosol properties and the oxidised nitrogen species in the gas phase. These will be supplemented by runs upstream and downstream of the wave clouds perpendicular to the wind to investigate in detail the effects of the cloud processing on the aerosol properties and the oxidised nitrogen in the gas phase

Sortie Detail – assuming a refueling stop after the science flying.

a. T+0 Take off and climb to FL200 for transit to operating area (a NOxy calibration should be undertaken where appropriate during transit – ie up to 20 minutes at FL150).
b. T+70 Perform vertical profile through cirrus from below cloud base or –15°C level (whichever is higher) to aircraft ceiling, or to above cirrus top (whichever is lower).
c. T+90 Descend to below cirrus and perform straight and level run along the mean wind direction 300 feet below cloud base for the length of the cloud. Do not sample if cloud temperature exceeds –15°C
d. T+100 Turn through 180 degrees. Ascend to cloud base and perform straight and level run for length of cloud in cloud. Turn through 180 degrees ascend to middle of cloud and perform straight and level run for length of cloud.
e. T+120 Return to upwind edge of the cloud and make straight and level run in inflow for the width of the cloud across wind.
f. T+135 Travel to middle of the cloud and make straight and level run across wind for the width of the cloud
g. T+146 Travel to downwind edge of the cloud and make straight and level run across wind for the width of the cloud
h. T+160 repeat the sequence c-g as time permits .
i. T+240 land and refuel
j. T+330 takeoff for return transit (and include a SLR at FL150 for NOxy calibration)
k. T+400 land Cranfield

Sortie Title UTLS Cirrus (Cirrus cloud microphysics & chemistry -Wave clouds Option 2)

Scientific Aims:

1. To measure the total number of Condensation Nuclei (CN), CCN, IN* and the size distribution of optically active particles in clean and polluted air in the UTLS region over the UK. Assessment of their spatial distribution and their likely source based on tracer measurements and air mass history.
2. To quantify the extent to which air mass history, and gas and particle loading can affect the microphysical properties of cirrus clouds in the UTLS region, in particular, the size distribution, phase and morphology of cloud particles.
3. To obtain estimates of HNO_3 loss to cirrus clouds and the subsequent effect on the aerosol population after the cloud has evaporated using case studies involving one or more wave clouds.
4. To make observations of the number, size distribution, phase and morphology of droplets and crystals in cirrus cloud and the number and size distribution of interstitial particles and correlate these with measurements of tracers that identify anthropogenic influence. Hence building on objective 3 to investigate the influence of cirrus on the distribution of aerosol and gases in the UTLS region as cloud and precipitation evaporate.
5. To make an assessment of the chemical composition of the particulate in the UTLS region as a function of their size, their spatial variability and the effect different sources have on their composition.
6. To use measurements of the masses of key components as a function of size of cirrus particle dry residues and interstitial particles to determine if there are distinct chemical differences between activated and unactivated particles.
7. To establish the partitioning of oxidised nitrogen between the gas and aerosol phases as a function of air mass history and source region

Weather conditions

Cirrus cloud associated with mountain waves preferably over the UK.

Key Measurements

Full suite of aerosol gas and microphysics equipment to be operated continuously. This includes aerosol and gas measurements in cloudy passes.

Video – the default recording setup should be forward and rear. Flight manager or Flight Scientists should monitor rearward video when at temperatures lower than -40C and note in logs the presence or absence of contrails. In any circumstance where a contrail appears to be on the margin of forming, a brief decrease in the engine power setting should be requested and any change in the contrail appearance noted.

Cloud Physics

- **FFSSP, 2DC, 2DP, PCASP, SID-1 and SID-2*.** Normal monitoring to ensure correct operation. Operator should note particular features of interest eg. high concentrations, appearance of pristine ice crystal habits. (* If SID-2 computer suffers from regular crashes, then it may be operated so that data logging is only switched on during flight legs).
- **ADA/CPI** – as above
- **CCN** - alleviator should be filled whilst in clear air either below, between or upwind of the cloud layer(s) of interest. 1 sample per run, if possible.
- **J-W LWC and Nevzorov LWC/TWC**. Where run is only partially in cloud and starts in clear, these should be zeroed/calibrated and logged by Flight Manager.
- **TWC** – initial profile should avoid cloud, if possible, to achieve good calibration.

FWVS – Switch off the lamp when frost point rises above –15°C. Calibration should be performed following altitude changes.

WAS – On alongwind runs, 2 bottle samples per flight leg (one upwind of cloud and one downwind).

AMS to be operated on Rosemont inlet. Use CVI inlet on some in-cloud passes as called by mission scientist so require switching inlet. The inlet should be kept closed to avoid contamination whilst the GPU is operating prior to takeoff. It may be opened once the GPU has been removed. Similarly, intake should be closed before GPU is started post-flight.

Mission Scientist's Log

M. Sci KEITH BOWER Crews 8 –

Flight No **B**.122..... Date 17/06/05..... Page 1 of 6

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
08:13:30	≡ 09:13:39 BST (IGNB)				
08:55:43	BST				Taxi
09:02:32	BST				T/O
08:11:00	Cal.	FL140	333		NO_{xy} Cal –
08:13:48		FL140	332	52.7N/1.1W	passed over Leicester – East Midlands ahead
					–2.53°C/–12.13°C 2m/s/223° 549mb 255kts
					AMS – Zero particle after test – seeing particle – leak
09:27:56	BST				NO_{xy} Cal complete
					Rebooting MMACS – because of drop outs
08:51:33	Trans	FL160	332	55.6/3.3W	–9.53/–11.03°C 13m/s/220°
08:53:00					RH Turn ⇒ to new Sortie lead based
					on Phil Brain's update
09:01:30	P1	FL180	68°		Started P1
9:03:29	P1	FL		55.9/1.7W	–14.1/–16.34°C 10/221° going W–E
					FL205 CB
			90		FL230 – CT.
09:06:20	P1 int	FL230	90	55.9/1.3W	–19.38°/–20.21° 9m/s/213° 409mb RHT
					small sporadic + large agg B Rossiter
09:08:42	P1 rec	FL230	280	55.8/1.5W	contaminated probe – E–W
		FL250			–23.94/–25.42° 14m/s/230° (Capt 237°)
					Clouds – from Pennines – Wave ? (Capt – lacing – LW
					Small sporadic – CPI – Not on ADA
					FFSS – small N° down
					CT 26300'
09:15:40	P1 int	FL270		55.9/2.4W	–28.4/–29.76°C 344mb 9m/s/209°

Mission Scientist's Log

M.Sci KEITH BOWER CIRRUS 8

Flight No **B**.122..... Date 17/08/05.....

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
					Some Ice on Fwd facing Camera – after last deck
					Contrailing too - 28.15/-30.37 12m/s/215
09:18:36	P1 rec	FL270	56°	55.9/2.1W	CPI small IR agg - small rosettes - some rounded
					Some pristine
09:20:30	P1	FL280	56	56.0/1.9W	-31.25/-31.52° 326 mb
09:21.40	P1	FL290	73	56.0/1.7W	33.51/32.92° 311 mb
					CPI - lots small IR rosettes plate aggregates
09:24:29	P1 int	FL300		56.1/1.2W	-36.66/-35.59 301 mb 21m/s/230°
	Planed				CPI BR + large agg rosettes mix - edge of
					deck.
09:29:51	R1 st	FL 270		56.0/1.7W	CCN sample -28.59/-29.25 17m/s/244
					343 mb.
09:32:00					CT 280-265
09:32.40					out of cloud - not much
					2D - not many large particles imag
					SIDI - high conc small particles - ice
09 34:08	R1 end				Will climb 1000' - and try to work along with
09:37:39		FL 280			Chem Cubs
09:37:55	R2 st	FL 280	85°	55.9/1.8W	328mb/-31.43°C
					CPI sm - large rosettes - occ spher/columns
					CPI rosettes with plate aggs
					329mb -30.91/-33.60° 10m/s/240
09:41:40	R2	FL280			-30.91/-34.0 7m/s/247° 328mb
09:45:55	R2	FL280	84°	55.9/0.5W	SO_2 box - decent not at this alt - switch off for now
09:47:10					CCN finished

3hours – left

3hrs

Mission Scientist's Log

M.Sci KEITH BOWER CIRRUS 8

Flight No **B**.122..... Date ..17/08/05..... Page 3 of 6

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
09:46:43	R2 end	FL 280	turning	56.0/0.0	
09:51.20	R3	FL 290	256°	56.1/0.2W	-33.87/-36.65° 13m/s/265° 314 mb
09:54.28	R3	FL290	256	56.0/0.7W	C. Chem Cals down 553 Lts
					Icethrator/wave clouds ahead
					2 photographs — 220° wave clouds seen
09:50 ish	R3				CCN finished
10:03:50					Straight thro broad cloud
10:05:12	R3 end	FL290		55.9/2.3W	-33.9/-35.21 14m/s/216°
10:07:44	R4	FL280	84°		
10:09:31	R4				In Cloud again -32.7/-28
10:12:41	R4 end	FL280	84°	55.8/1.3W	-30.90°/-34.19°
10:14:43	R4.2 st	FL280	~~344~~	55.9/1.5W	-30.92/-35.14 328mb 16m/s/234° 339 Lts
10:17:45	R4.2				CCN finished — in cloud
10:19:35ish					Out of cloud
10:20:48	R4.2 end	FL280		55.7/2.1W	NAT — need run 1000' lower
					CPT test passes :— v small parts Nucleus
					size bigger nucleus
10:23:54	R5.1 st	FL270	103	55.8/2.0W	not along or across wind — can't do much about it
10:25:13					entering cloud 344mb
10:25:47					exiting cloud. 344 mb
10:29:22	R5.1 end	FL270	100	55.7/1.2W	-28.35/-31.56°C 7m/s/247° 346mb NAT
10:32:17	R5.2 st	FL270	265°		
10:34:10	R5.2	FL270	261°	55.9/1.6W	Photo ahead -28.31/-21.55°C 344mb
					2 Photo Ahead
10:30:21					Going into cloud

2hrs 1 hours left

Mission Scientist's Log

M. Sci KEITH BOWER CIRRUS 8

Flight No **B** B122 Date 17/05/05 Page 4 of 6

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
10:38:20	R5 2nd	FL270	253	55.8/2.1W	end run - will go down
10:41:19	R6. 1st	FL250			
10:42:21					in cloud. -24.52/-21.7 11m/s/224°
10:42.51					2D- just SIP probes seem only smaller shift
					2D little CPI count.
10:46:21	R6.1 end	FL250		56.1/1.4W	Will descend to FL230
10:48:40	R7	FL230	241	56.0/1.3W	Skimming CT's now (damn!)
					-19.7°C/-19.5° 13m/s/235° 409mb
					Odd large column - particle photos - ages plate
					Now near CB
					Ice detected FFSSP - v low conc
					but mic not - seem it too.
					Out of cloud
10:55:03					Into Cloud
10:55:22	R7 end			55.7/2.1	9/180° (-18.49 -18.53 416mb start of descent)
					(FL 223)
10:59:14	R8 st	FL190	27°	55.8/1.8W	-10.4/-12.74°C 8m/s/263° 484mb
11:02:30	R8	FL190	24°	56.1/1.6W	just in CB's again
11:04:17	R8 end	FL190	2°	55.6/1.5W	14m/s/248° -11.01/11.22° 490mb
		FL183	310	57.1/2.8	-8.76/-10.6 499mb 17 m/s/230
11:18:33	P2 start	FL160	311	51.7/2.8W	Start Climb - profile ascent
11:24:57	P2 int	FL250	321	57.5/3.3W	-23.55/-25.2° 32m/s/229 376mb.
					In cloud - since transit at FL180
11:29:11	P2 rec	FL250	92°	57.4/3.2W	
11:29:55	P2	FL263	80°	57.4.3.0W	Close to main CT

Mission Scientist's Log

M. Sci KEITH BOWER CIRRUS 8

Flight No **B**...122..... Date ...17/08/05..... Page ...5... of ...6...

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
11:33:17	P2	28600	84	57.5/2.4	Near CT — or gap in cloud — back in cloud.
					Now seed Hurny CB
11:37:45	P2	31000	66	57.5/1.6W	286 mb 336 kts -38.95/-39.78 288 mb
11:39:50	P2	32000	85	57.6/1.2W	273 mb -41.49/-41.41° 23 m/s/226°
					CPI — agg ~ 100-200μm - small branch blobs
					2D - 50/litre 2DC 150-200μ
					(SID1 - wobble)
11:44:00	P2	34600	87	57.7/0.4E	CPI 10-30/l <100μ SIR, Column
					2D - S/L - much reduced
11:49:01	P2end	35000		57.7/0.6E	Contrail.
11:49:49					Contrail above - now creating our own
11:50:50	5	FL350	5	57.8/0.6E	-49.77/-50.29 29m/s/249 236mb
11:51:22	R9	FL350	266	57.8/0.5E	Westerly - (NE Aberdeen) - -49.79/-50.49°C
11:52.45	R9	FL350	263	57.8/0.3E	Cirrus Cloud deck - WAS start - CCN start
11:56:20	R9				Seeing Odd Column - CPI
12:01:02	R9	FL350	265	5	2D - 15-20 litre 236mb 33m/s/241°
12:02:28	R9	FL350	265	57.6/1.1W	SID2 - drop out again -50.08/-49.8°C
12:03:24	R9 end	FL350	264	57.8/1.5W	CCN finished - descending to FL330
12:06:27	R10st	FL330	90	57.7/1.4W	-44.53/-44.59°C 26m/s/228° 261mb
					CPI pristine roughs - perimeters.
					now: IRRegular + B Rosss
12:14:46	R10			57.8/0.3E	Running out of CT now 261mb
12:15:36	R10 end	FL330	90	57.8/0.4E	-46.52/-45.22° 19m/s/235° 261mb
12:16:24					Underneath a contrail - probably ours
12.18:23	R11st	FL290	264	57.9/0.3E	23m/s/246° -38.4/-36.65 314mb

Mission Scientist's Log

M. Sci KEITH Bowen Cirrus 8

Flight No **B**.122..... Date 17/08/05..... Page 6 of 6

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
12:26:00	R11	FL210	265	~~57~~.9/0.6W	-33.63/-35.52 25m/s/247° 314mb
12.29.33	R11 end	FL290	264	57.9/1.2W	will descend to FL270 – CCN finished
12:32:02	R12	FL 270	90	57.8/1.2W	343mb, -28.22/-29.12° 21m/s/241°
					Cloud is deeper at W end of runs – reason
					the front as per normal
12:37:44	R12	FL270	86	57.9/0.1W	Out of Cloud base here
					In a bit more cloud – then gaps agn
12:39.50	R12	FL270	86		In CB agn
12:40:09	R12 end	FL270	86	57.9/0.3W	will descend to FL 240 for final leg
12.41 47				58.0/0.4E	below our contrail again
12:42 57	R13 st	FL240	264	58.0/0.1E	-21.06°C/-23.64° 19m/s/251° 392mb 301kts
					started out of cloud – CCN sample – will run out
					cloud again shortly.
12:45 30 st	R13	FL240			CPI – chain aggregates – ~~base~~
12:47:37					see out to left – no cloud there – or here
12:48:20	R13	FL240			cloud on RHS, not on left 392mb
					19 m/s / 245°
12:49:18	R13	FL240	261	58.0/0.5W	220/11 kts – Kinloss alerted
12.50.59	R13 e	FL 240	261	58.0/0.6	
		FL 230	260		-19.67/-21.57, 411mb
		FL160			Out of CB
12:54:07	NO_{xy}	FL150	254	57.9/1.3	Cals -3.36°/-8.10° 16m/s/229° 301kts
					ADA – not seeing anything in current cloud
					(→ low oscillation?)
14:05:00	BST 1CNO				end of NO_{xy} Cal

7810'
5760'

CB – Raining

14:12:23

CORE CHEMISTRY FLIGHT LOG FOR FLIGHT FOLDER

Flight Number : B122
Date : 17/8/05
Operator and contact info : Ruth Purvis (rupu@faam.ac.uk)

Problems with Instruments

CO	**Problem with standard regulator**
O_3	**None**
NO_x	**Ozonator flow at high altitude therefore switched off between 11:50 and 12:45 GMT**
SO_2	**Switched off as no flow at high altitude**
TDLAS	**N/A**
WAS	**N/A**

CO Calibrations

A full calibration lasts approx three minutes, it consists of a cal and a zero
Shorter (quick cals) are sometimes done at low level which is calibration only

Time (GMT)	Level	Comments
8:12	FL140	
unknown	FL140	
8:48	FL180	
9:26 – 9:27	FL300	Times are approx and may not be full calibration time
9:31 – 9:33	FL270	
9:38 – 9:41	FL280	
9:52 – 9:54	FL290	
10:23 – 10:26	FL270	
10:40 – 10:43	FL250	
10:48		Quick cal
11:07 – 11:10	FL180	
11:50 - 11:53	FL350	
12:06 – 12:08	FL330	
12:18 – 12:21	FL290	

CLOUD PHYSICS LOG

Flight No. B122 **Date:05/09/05** **Operator:MAP** **Page 1 of 4**

G.M.T.	PCASP		FSSP	SID1	2D2-C			2D2-P			Remarks
DRS Time	Conc/cc	Mean R	Block Transfer	Particle Count	Conc/L	Max Size	Habit	Conc/m3	Max Size	Habit	
09:05:30											Start Profile 1 (sid2 crash loss log)
09:20:17	10	0.47	82	100	10	150	11				FL280
09:21:26	3	0.08		10	20	275	11	50	200	11	FL290
09:24:25	1	0.08									End of Profile 1 @ FL300
09:29:53											Start Run 1 @ FL270
09:30:00	15	0.07	84	5				15			
09:32:00	10	1.12	86	3000	1	350	10				
09:34:00	6	0.07	87								
09:34:08											End of Run
09:37:58											Start Run 2 @ FL280
09:38:00	3	0.07						Noise			
09:40:00	200	0.72	88	100	15	300	10	10	200	11	
09:42:00	5	0.07									
09:44:00	5	0.08						10			
09:46:00	5	0.07						Noise			
09:48:45											End of Run
09:51:22											Start Run 3 @ FL290
09:52:00	4	0.07						Noise			
09:54:00	5	0.06			7	250	10	Noise			
09:56:00	4	0.20	89	20	6	200	10	500	200	11	
09:58:00	4	0.07						Noise			
10:00:00	4	0.07						Noise			
10:02:00	4	0.08						Noise			SID2 crash
10:04:00	3	0.16		1000	100	200	10	Noise			
10:05:14											End of Run
10:07:44											Start Run 4.1 @ FL280
10:08:00	5	0.08									
10:10:00	90	1.00		3000	25	250	10	Noise			Rearm 2 1
10:12:00	5	0.08									
10:12:46											End of Run
10:15:46											Start Run 4.2 @ FL280
10:16:00	5	0.07	90								
10:18:00	25	0.83	91	200	400	150	10	Noise			
10:20:00	7	0.08						Noise			

CLOUD PHYSICS LOG

Flight No. B122 **Date:05/09/05** **Operator:MAP** **Page 2 of 4**

G.M.T.	PCASP		FSSP	SID1	2D2-C			2D2-P			Remarks
DRS Time	Conc/cc	Mean R	Block Transfer	Particle Count	Conc/L	Max Size	Habit	Conc/m3	Max Size	Habit	
10:20:50											End of Run
10:24:00	8	0.08	91					Noise			Start Run 5.1 @ FL270
10:26:00	8	0.08						Noise			
10:28:00	11	0.08		1				Noise			
10:29:25											End of Run
10:32:20											Start Run 5.2 @ FL270
10:33:00	4	0.07									Rearm 2 64
10:35:00	6	0.07									
10:37:00	5	0.07									
10:38:23											End of Run
10:41:21											Start Run 6 @ FL250
10:42:00	8	0.07									
10:44:00	6	0.07		2	15	500	8	2900	400	11	
10:46:00	4	0.07									
10:46:24											End of Run
10:48:47											Start Run 7 @ FL230
10:49:00	4	0.08	100	2							
10:51:00	2	0.28	118	10	1	600	8	290	400	11	
10:53:00	12	0.08	124								
10:55:25											End of Run 7
10:59:16											Start Run 8 @ FL190
11:00:00	4	0.07	140								
11:02:00	10	0.14		1000	1	800	8	150	2000	8	
11:04:00	15	0.25	141	100	1	800	8	80	1600	8	
11:04:23											End of Run
11:18:34	450	0.05	288	100	100	800	8	5400	4000	8	Start Profile 2 from FL180
11:19:39	4	0.85	296	80	1	500	8	1000	800	8	FL190
11:20:35	85	0.88	297	100	50	750	8	7500	600	11	FL200
11:21:35	85	0.94	300	200	100	800	8	180000	600	11	FL210
11:22:23	100	0.99	307	125	100	600	8	160000	600	11	FL220
11:23:23	110	0.76	309	100	35	600	4	6900	600	11	FL230
11:24:36	20	0.76	312	60	50	600	4	4000	600	11	FL240
11:25:02	120	0.49	313	90	20	500	4	4700	600	11	FL250

CLOUD PHYSICS LOG

Flight No. B122 **Date:05/09/05** **Operator:MAP** **Page 3 of 4**

G.M.T.	PCASP		FSSP	SID1	2D2-C			2D2-P			Remarks
DRS Time	Conc/cc	Mean R	Block Transfer	Particle Count	Conc/L	Max Size	Habit	Conc/m3	Max Size	Habit	
11:29:19	25	0.85	321	40	20	500	4	6900	600	11	FL260
11:30:49	7	0.51	322	90	60	450	10	9100	400	11	FL270
11:31:58	25	0.66	323	90	50	250	10	800	200	11	FL280
11:33:39	25	0.89	324	10							FL290
11:35:17	11	0.40	325	90	125	175	10	110	200	11	FL300
11:37:38	4	0.13		100	80	175	10	110	200	11	FL310
11:39:47	5	0.08									FL320 SID2 Fail
11:44:59	3	0.13		10	1	100	11	Noise			FL340
11:49:05	5	0.09	326	10	1						End of Profile 2 @ FL350
11:51:25											Start Run 9 @ FL350
11:52:00	6	0.10		5	4			Noise			
11:54:00	6	0.11		5	3	50	11	Noise			
11:56:00	6	0.13		10	25	150	10	Noise			
11:58:00											SID2 Fail
12:03:35											End of Run
12:06:28											Start Run 10 @ FL330
12:07:00	70	0.65	327	30	20	175	10	Noise			
12:09:00	8	0.14		15	15	150	10	Noise			
12:11:00	5	0.10		5	3			Noise			SID2 fail
12:15:43											End of Run
12:18:27											Start Run 11 @ FL290
12:19:00	2	0.09	328								
12:21:00	5	0.10		2				Noise			
12:23:00	4	0.31		10	1			Noise			
12:25:00	50	0.47		20	10	300	10	Noise			
12:27:00											SID2 fail
12:29:39											End of Run
12:32:04											Start Run 12 @ FL270
12:33:00	3	0.41	335	80	25	200	10	3200	200	11	
12:35:00	60	0.71	336	60	30	350	10	5400	200	11	Rearm 2 64
12:37:00	35	0.66	337	10	5	350	10	25			
12:39:00	35	0.78		20	15	150	10	4700	200	11	
12:40:10											End of Run

CLOUD PHYSICS LOG

Flight No. B122 **Date:05/09/05** **Operator:MAP** **Page 4 of 4**

G.M.T.	PCASP		FSSP	SID1	2D2-C			2D2-P			Remarks
DRS Time	Conc/cc	Mean R	Block Transfer	Particle Count	Conc/L	Max Size	Habit	Conc/m3	Max Size	Habit	
12:43:03											Start Run 13@ FL240
12:44:00	6	0.07	341								
12:46:00	3	0.20		5	2	200	10				
12:48:00											SID2 fail
12:51:00											End of Run
	SEADAS Time offset = 0 PCASP Flow rate = 0.9 cc/sec SID1 time is +1 hour SID2 time on display is + 1 hour from PC clock SID2 Failed many times particularly later in flight. Most of transit (1 hour) OK with no anomalous variation in housekeeping data.										

CLOUD PHYSICS PROCESSING LOG

Flight number: B122
Date: 17/08/2005

A) FFSSP PROCESSING		
Processing Stage	Completed	Comments
1) Transfer *.txt files from DVD to PC B122_FFSSP_hh.txt for each hour of data B122_FFSSP_HVMS.txt		
2) FTP the files (ascii) from the PC to the directory PMSDATA: on FLOODS	14/11/05	
3) RUN MRFB:[PMS.FAST_FSSP]FSSP_EXTRACT_TAS a) Flight number: B122 b) Path name: MFDDATA:B122_MFDX c) Output directory: PMSDATA: d) Start time: 0 if unknown e) End time: 240000 if unknown	29/11/05	MFD is faulty – will need to re-run – completed 29/11/05
4) RUN MRFB:[PMS.FAST_FSSP]FFSSP_PROCESS_TXT a) Flight number: B122 b) Directory: PMSDATA: c) TAS in processing: Y d) Vel threshold (clicks) 0 e) Calibration file: Use the most recent calibration file. Format FFSSP_CALddmmyyyy.txt Calibration files to be stored in MRFB:[PMS.FAST_FSSP] f) Adjust FFSSP time Y/N g) If Y, enter value to add to data time (seconds)	29/11/05	Note the calibration file used FFSSP_CAL23082005.TXT Yes only if gross errors occur in FFSSP time eg; ~ 1hour Complete
5) In PVWAVE a) enter: !path=!path+',mrfb:[pms.proc]' Note that the comma before "mrfb" is important! b) write_procffssp_to_m5,'pmsdata:B122_procffssp.dat', 'mfddata:B122_mfdX','pmsdata:B122_m5procffssp',/auto 1st argument is output file from 5) 2nd argument is the MFD 3rd argument is the new FFSSP data file in M5 format		Note the correction applied to FFSSP time by /auto 20 sec subtracted from FFSSP time
c) exit	29/11/05	complete
6) MODIFY a) Modifying datasets: pmsdata:B122_m5procffssp b) Datset: mfddata:B122_mfdX c) New dataset: Enter updated MFD name d) Parameter description file: leave blank to use default	29/11/05	

CLOUD PHYSICS PROCESSING LOG

Flight number: B122
Date: 17/08/2005

B) 2D PROCESSING		
Processing Stage	Completed	Comments
1) Transfer B122.dat file from CD/DVD to PC		
2) Zip up file on PC (B122.zip)		
3) FTP the zipped file (binary) from the PC to the directory SEADAS_DATA:[SEADAS_DATA] on FLOODS		
4) Log on to FLOODS		
5) unzip SEADAS_DATA:[SEADAS_DATA]B122.zip	14/11/05	
6) In PVWAVE i) !PATH=!PATH+',MRFB:[PMS.PROC]' ii) CONVERT_SEADAS_FILE a) Input file: SEADAS_DATA:[SEADAS_DATA]B122.dat b) Output file: SEADAS_DATA:[SEADAS_DATA] B122_seadas.dat iii) exit	14/11/05	Note the number of bad block reads and/or final numbers of blocks read & written Complete, no read errers
7) run MRFB:[PMS.SEADAS]READM200_FILE a) Default directory: PMSDATA: b) Flight number: B122 c) Disk file name: SEADAS_DATA:[SEADAS_DATA] B122_seadas.dat d) Comment string: e) Start time: 0 if unknown f) End time: 240000 if unknown g) Read 2DC: Y h) Read 2DP: Y i) Secondary data Y j) FSP-SYNC: Y k) cmd.str: Y l) Auto time correction: N m) Full length secondary: N	14/11/05	complete
8) 2D image display and printing Quick look at image blocks if required In PVWAVE i) !PATH=!PATH+',MRFB:[PMS.PROC]' i) WAVE> IMAGEDISPLAY a) 2D directory name: PMSDATA: b) Flight number: B122 c) IWC plot: N d) Select probe: (1) 2DC (2) 2DP e) Start time: 0 if unknown f) End time: 240000 if unknown g) Time interval (sec): 0 for every image block nominal 5 sec		This section is optional
Preparation of imagery for Core data product iii) WAVE> auto_image		

a) 2D directory name: PMSDATA: b) Flight number: B122 c) Enter date: YYYYMMDD d) Enter start time 0 if unknown e) Enter end time 240000 if unknown f) Enter time interval (sec) between successive imaged blocks 10 iv) exit PVWAVE Creates files	090000 131500 10 PMSDATA:	FAAM_YYYYMMDD_R0_B122_2Dx_IMAGES.PS
ftp *.PS files from PMSDATA: to PC		
Load each into Ghostview or other pdf-converter		
Output as pdf file (70 dpi resolution) and append name prefix of CORE-CLOUD-PHY_ to converted files	14/11/05	Complete. In O:\CloudPhysics Core data
9) run MRFB:[PMS.SPEC2D.AUTO]PROCESS2D_AUTO a) Flight number: B122 b) Directory: PMSDATA: c) File generation: Hit enter d) Time correction: Time offset of the 2D data	0	As noted in operator log
e) TAS: Y f) MFD directory: MFDDATA:B122_MFDX g) Probe number: (1) 2DC (2) 2DP (0) Both 0 unless either probe known to be faulty h) Start time: 0 if unkbown	090000	
i) End time: 240000 if unknown	131500 (124958)	Data processing ended at 124958 when program crashed. This includes most of final flight leg so deemed OK. Data reprocessed with end time = 124958
j) Nominal averaging: 0.2 seconds for conversion to M5	0.2	
k) Particle type: 8 if known to be in ice cloud 11 if known to be in water cloud 8 if known to be in mixed-phase 8 if unknown	8	Note the particle type
l) Coefficient choice: 2	2	
m) Output root filename: PMSDATA:B122_PROC2D	29/11/05	MFD is faulty – need to re-run Completed 29/11/05
10) In PVWAVE i) enter: !PATH=!PATH+',MRFB:[PMS.PROC]' Note that the comma before "mrfb" is important! ii) WRITE_PROC2D_TO_M5, 'PMSDATA:B122_PROC2D.DAT', 'PMSDATA:B122_M5PROC2D' iii) exit	29/11/05	complete
11) MODIFY a) Modifying datasets: pmsdata:B122_m5proc2D b) Datset: mfddata:B122_mfdX c) New dataset: Enter modified MFD name d) Parameter description file: leave blank to use default		Completed by first EXTRACTing a separate MFD starting at 083000. MODIFY could then be completed.

CLOUD PHYSICS PROCESSING LOG

Flight number: B122
Date: 17/08/2005

C) PCASP PROCESSING		
Processing Stage	Completed	Comments
1) Complete stage 7) in 2D processing Ensures B122_FSP.DAT containing raw PCASP data is written to directory PMSDATA:		
2) run MRFB:[PMS.PCASP]PROCPCASP_NEW a) Flight number: B122 b) File name: PMSDATA:B122_FSP.DAT c) Root output name: PMSDATA:B122_PROCPCASP Produces PMSDATA:B122_PROCPCASP.DAT (binary) PMSDATA:B122_PROCPCASP.OUT (ascii) d) Minimum size channel: Default = 1 If smallest size channel are known to be noisy the value of the highest noise free channel to be entered here e) Calibration volume flow rate: Use the most recent value. Calibration files to be stored in **????** Entering zero gives default value = 1.0 cm3/sec f) Time correction: Same value as used in 2D processing stage 9 d) g) Start time: 0 if unknown h) End time: 240000 if unknown	 1 0.9 cm3/sec 080200 130800	Note the min size channel Note the volume flow rate No noise noted in operator log From operator log 29/11/05
3) In PVWAVE i) enter: !PATH=!PATH+',MRFB:[PMS.PROC]' Note that the comma before "mrfb" is important! ii) write_procpcasp_to_m5,'pmsdata:B122_procpcasp.dat' ,'pmsdata:B122_m5procpcasp' iii) exit		
4) MODIFY a) Modifying datasets: pmsdata:B122_m5procpcasp b) Datset: mfddata:B122_mfdX c) New dataset: Enter modified MFD name d) Parameter description file: leave blank to use default	 MFDB 29/11/05	

FLIGHT NUMBER: B122	DATE: 17/8/05	OPERATOR: PAUJ	Page 1 of 2
PROJECT: CIRRUS.			

CCN LOG

ALLEVIATOR GMT		HEIGHT	TEMP INLET			STATIC				REMARKS
ON	OFF			1	2	3	4	5		
				1.75	2.5	3.5	4.25	5.5		
4:5			25:35	0.49					S	
				385					D	
9:30				295					B	Ditched
				2451					R	
				836	836				P	
			25:18	0.49	0.69	1.1	1.041	2.01	S	
9:38:10				850	449	1955	2012	3187	D	
				304	289	296	296	531	B	
				2459	2457	2458	2458	2453	R	
				826.7	827.4	826.8	827.1	827	P	
				1.75	2.5	3.5	4.25	5.5		
			24:5	0.49	0.72	1.04	1.42	2.01	S	
				386.	1817	2606	2350	2515	D	
9:51:30				276	289	295	329	570	B	
				2446	2448	2447	2446	2441	R	
				817.5	817.5	817.7	817.3	817.6	P	
				0.49	0.72	1.08	1.41	2.03	S	
			25.24	439	1279	1415	1565	1799	D	
10:07:50				270	285	291	297	385	B	
				2433	2427	2414	2398	2385	R	
				826.4	826.8	826.9	826.7	826.9	P	
				1.75	2.5	3.5	4.25	5.5		
			24:32	0.49	0.72	1.06	1.41	2.06	S	
				515	415	243	385	503	D	
10:28:00				285	292	293	296	301	B	
				2368	2364	2351	2352	2348	R	
				835.9	835.7	836.2	836	836	P	
[illegible]				0.46	0.69	1.07	1.29	2.07	S	Dropped a 1,000 ft from 190-180
[illegible]			25:66	389	264	379	550	1171	D	
				259	246	246	240	280	B	
10:59:40				2367	2371	2373	2378	2375	R	
				912.7	913	917.3	921.5	921.2	P	
				1.75	2.5	3.5	4.25	5.5		
				0.48	0.72	1.08	1.40	2.04	S	
11:52:30			24:97	216	347	219	486	532	D	
				276	260	264	272	272	B	
				2363	2350	2366	2392	2387	R	
				750.8	750.9	750	751.6	751.6	P	
				0.49	0.72	1.08	1.40	2.03	S	
12:18:40			24.2	462	224	457	526	460	D	
				269	278	282	284	303	B	
				2462	2466	2470	2465	2471	R	
				817	817.3	817.3	817.2	817	P	

FLIGHT NUMBER: B122	DATE: 7/8/05	OPERATOR: Paul S.	Page 2 of 2
PROJECT: Cirrus			

CCN LOG

ALLEVIATOR GMT		HEIGHT	TEMP INLET			STATIC				REMARKS
ON	OFF			1	2	3	4	5		
				1.75	2.5	3.5	4.25	5.5		
124320				0.49	0.69	1.05	1.37	2.00	S	
			24.2	346	508	708	466	657	D	
				270	274	280	280	300	B	
				2480	2480	2480	2481	2480	R	
				866.1	866.4	866.3	866.7	866	P	
									S	
									D	
									B	
									R	
									P	
				1.75	2.5	3.5	4.25	5.5		
									S	
									D	
									B	
									R	
									P	
									S	
									D	
									B	
									R	
									P	
				1.75	2.5	3.5	4.25	5.5		
									S	
									D	
									B	
									R	
									P	
									S	
									D	
									B	
									R	
									P	
				1.75	2.5	3.5	4.25	5.5		
									S	
									D	
									B	
									R	
									P	
									S	
									D	
									B	
									R	
									P	

AMS PreFlght Setup/Cal Sheet v2.00

DATE: 17/08/05 FLIGHT: B122 OPERATOR: G.C.

Time:	Action:	Location:	Yes/No:	Notes	Comments:
Power ON	Ensure Inlet Closed	Inlet Valve	✓		
	Ensure Multiplier Off	Electronics box	✓		
	Ensure Heater Off	Electronics box	✓		
	Ensure all Pumps Off	Pump Control box	✓		
	Turn on 230V Breaker	Power unit on a/c wall	✓		
	Turn on: Electronics box power Diaphragm pump power Turbo pump power CPC Power, both Buttons	Power distribution box	✓ ✓ ✓ ✓		
	Open backing pump valve	Front facing side of rack.	✓		
	Turn on Alcatel…100% speed Turbo pumps 2 and 3 ON…100% Turbo pumps 4 and 5 ON…100% Turbo pump 6 ON…100%	Pump Control Box, after #6 Pump Control Box Pump Control Box Pump Control Box	✓ ✓ ✓ ✓	**Monitor Pump Currents**	
	Plug in CPC fill bottle	Rear of CPC	✓		
	Turn on heater	Electronics box	✓	Approx 2.8V, 0.9A	
Pre-Brief	Turn on Balzers Box	Power distribution box and Balzers box	✓		
	Turn on Copper	Electronics box	✓	Approx 125Hz	
	Turn on PC/Monitor	Power distribution box and PC	✓		
	Start AMS software	PC Desktop	✓		
	Turn autosaving off	Parameter menu, Averaging and saving tab	✓	NEGATIVE NUMBER	
	Reduce Multiplier voltage by 0.5kV	Parameter menu, Muliplier and chopper tab	✓		
	Set filament to 0.00mA,Scan range 0-300amu	Parameter menu, Mass Spectrometer tab	✓		
	Turn Multiplier on	Electronics box	✓		
	Turn filament on @0.05mA	MS mode, shift+B, click emmision arrow	✓		

AMS PreFlght Setup/Cal Sheet v2.00

DATE: 17/08/05 FLIGHT: B122 OPERATOR: G.C.

Time:	Action:	Location:	Yes/No:	Notes	Comments:
Post Brief	Increase Multiplier voltage by 0.5kV	Parameter menu, Muliplier and chopper tab	✓		
	Close Grimm valve	Inlet valve	—		
	CPC in low flow	Shift+total on CPC display	✓		
	Check RF box, Tune if needed	Turn Tune Screw on RF Box for best hit	✓		
	Log CPC on AMS serial port 2	Parameter menu, Serial port tab	✓		
	Set mass range scan 0-300	Parameter menu, Mass Spectrometer tab	✓		
	Open AMS inlet	Inlet valve	✓		
	Increase filament to 2.5mA	MS mode, shift+B, click emmision arrow	✓		
	Toggle chopper in MS mode	Press T within MS mode	✓		
	Check Airbeams and flows	Add m28 to m/z selection, Clean pin hole???	✓	F=1.9,AB approx 2.3MHz	1.96, 2.6
	Tune Balzers	Software	✓	Ensure no major changes	
	Electron Multiplier Cal	Software, select suitable point manually	✓	Gain approx 3e6	
	Get tof masses for IE cal	Software,mz selection,left click on row	✓	15,16,17,30,46*	
	Set thresholds In tof mode	Left click "SP thresholds" in left border	✓	wait	
	Mass Range Cal	MS mode, Click Mass Calibration	✓		
	Add m28 to tof list	Software,mz selection,left click on row	✓		
	Run in MS-TOF alteration	Software	✓	Check tof windows	
	IE cal after 200 particles	Shift+M while sampling,Calibtrate,Save,Exit	✓	SMPS s=4.1,a=0.41,350nm	
	Remove CPC butanol from aircraft	Rear of CPC	✓		
	CPC in high flow	Shift+total on CPC display	✓		
	Reconnect inlet and GRIMM	Inlet	✓		
	Set CPC port=0 in AMS software	Parameter menu, Serial port tab	✓	LOG CPC IN LABVIEW	
	Set PC time with Horace	Desktop plus internet explorer	✓		
	Set mass range scan	Parameter menu, Mass Spectrometer tab	✓		
	Select tof masses to scan	Software,mz selection,left click on row	✓	14,16,30,43,44,46,48,57	
	Set thresholds In tof mode	Left click "SP thresholds" in left border	✓		
	Add m28 to tof list	Software,mz selection,left click on row	✓		
	Set DC marker 3 pos=6200	Parameter menu, Averaging and saving tab	✓		(5680)
	Backup parameter file	C:\AMS\AMSCODE\AMSMenu.prm	✓		
	Set save interval	Parameter menu, Averaging and saving tab	✓	0.5 minutes????	
	Reconnect inlet, Close AMS valve	Inlet	✓		
	Start CPC software	PC Desktop	✓		
	General Alteration mode,Open Inlet	Software, Start after t/o	✓		09:00

AMS Diagnostic Log Sheet v2.00

DATE: 17/08/05 FLIGHT: B122 OPERATOR: G.C.

Time 0835

Pump #	I(A)	I (typical)	Speed (%)	Speed typical
1/Alcatel	0.87	0.86	91.1	98
2	3.6	3.5	100	100
3	1.2	1	100	100
4	0.6	0.5	100	100
5	0.4	0.4	100	100
6	0.46	0.46	100	100

	New	Typical
Heater V	2.81	2.5
Heater I	0.92	0.9
Heater T	583	580
Heater B	73.3	75V
Multiplier	2.499	n/a
Pressure	0.067	2 Torr

	New	Typical
I electronics	1	1A
I turbo	7	7A
I diaphragm	1.4	2A
MS AB	1.63	2.2Mhz
TOF AB	1.26	2Mhz
Flow	1.30	2

Time 0940

no significant change 1040

Pump #	I(A)	I (typical)	Speed (%)	Speed typical
1/Alcatel	0.58	0.86	88.8	98
2	2.30	3.5	100	100
3	1.18	1	100	100
4	0.60	0.5	100	100
5	0.41	0.4	100	100
6	0.43	0.46	100	100

	New	Typical
Heater V	2.80	2.5
Heater I	0.92	0.9
Heater T	583	580
Heater B	733	75V
Multiplier	2.500	n/a
Pressure	0.88	2 Torr

	New	Typical
I electronics	1	1A
I turbo	6	7A
I diaphragm	1.4	2A
MS AB	1.27	2.2Mhz
TOF AB	1.28	2Mhz
Flow	0.76	2

Time 1140

no significant change 1230

Pump #	I(A)	I (typical)	Speed (%)	Speed typical
1/Alcatel	0.52	0.86	89.2	98
2	2.15	3.5	100	100
3	1.13	1	100	100
4	0.57	0.5	100	100
5	0.41	0.4	100	100
6	0.43	0.46	100	100

	New	Typical
Heater V	2.80	2.5
Heater I	0.92	0.9
Heater T	73.3 → 583	580
Heater B		75V
Multiplier	2.499	n/a
Pressure	0.777	2 Torr

	New	Typical
I electronics	1	1A
I turbo	7	7A
I diaphragm	1.4	2A
MS AB	1.23	2.2Mhz
TOF AB	1.07	2Mhz
Flow	0.65	2

Time

Pump #	I(A)	I (typical)	Speed (%)	Speed typical
1/Alcatel		0.86		98
2		3.5		100
3		1		100
4		0.5		100
5		0.4		100
6		0.46		100

	New	Typical
Heater V		2.5
Heater I		0.9
Heater T		580
Heater B		75V
Multiplier		n/a
Pressure		2 Torr

	New	Typical
I electronics		1A
I turbo		7A
I diaphragm		2A
MS AB		2.2Mhz
TOF AB		2Mhz
Flow		2

AMS Inflight Log Sheet v2.00

DATE: 17/08/05 FLIGHT: B122 OPERATOR: G.C.

Time	Event
0814	Zero particle filter run, only with particles. Problem with filter/tubing.

AMS Calibration Log Sheet v2.00

DATE: 17/08/05 FLIGHT: B122 OPERATOR: G-C.

Tuning

pre-flight

TIME:	Old	New	Typical
Def Inner	22	20	22
Def Outer	12	12	11
Heater Bias	-6.55	-6.36	-6.5
Focus	15.50	15.00	12.5
Extraction	240	224	220

post-flight.

TIME:	Old	New	Typical
Def Inner			22
Def Outer			11
Heater Bias			-6.5
Focus			12.5
Extraction			220

Multiplier Cal

Might have to tweak filament current and multiplier voltage in order to set thresholds in calibration!!!!
This is done in the parameter menu..... Multiplier and Chopper Tab

TIME:	New	Typical
KV	2.500	n/a
KV Change	0.000	0.025kV
Gain	2.93	3.00E+06
G used Change	1.15	1

TIME:	New	Typical
KV	2.525	n/a
KV Change	0.025	0.025kV
Gain	2.83 10^6	3.00E+06
G used Change	0.96	1

Ionization Efficiency Cal

TIME:	New	Typical
IE (NO3)	1.75	2.00E-06
RIE (NH4)	3.92	4
IPP NO3	407	400
IPP NH4	463	550
Airbeam MS	2.16	2.20E+06
Airbeam TOF	1.14	2.00E+06
Run Number	5994	n/a

TIME:	New	Typical
IE (NO3)	1.685 10^6	2.00E-06
RIE (NH4)	4.159	4
IPP NO3	392	400
IPP NH4	473	550
Airbeam MS	2.55 x 10^6	2.20E+06
Airbeam TOF	7.86 10^5	2.00E+06
Run Number	6470	n/a

Filter Run

TIME:	0814
Run number	5995

TIME:	1639
Run number	6471

leak! CPC & AMS recording single particles. either tube/filter the prob.

AMS PostFlght Setup/Cal Sheet v2.00

DATE: 17/08/05 FLIGHT: B122 OPERATOR: G.C.

Time:	Action:	Location:	Yes/No:	Notes	Comments:
Pre-land	Stop AMS,Grimm CPC logging	Software	✓		
	Close AMS inlet	Inlet	✓		
	Exit Labview		✓		
	Enable CPC in AMS software	Parameter Menu, Serial Ports tab	✓		
Post-land	Set CPC in Low Flow	Shift+totalizer on CPC display	✓		
	Open Inlet		-		
	Turn off autosave (-ve number)	Parameter Menu,Averaging and saving tab	-		
	Set mass range scan 0-300	Parameter menu, Mass Spectrometer tab	-		
	Electron Multiplier Cal	Software, select suitable point manually	✓	Check gain at current V	
	Get tof masses for IE cal	Software,mz selection,left click on row	✓	15,16,17,30,46*	
	Set thresholds In tof mode	Left click "SP thresholds" in left border	✓	wait	
	Mass Range Cal	MS mode, Click Mass Calibration	✓		
	Add m28 to tof list	Software,mz selection,left click on row	✓		
	Run in MS-TOF alteration	Software	✓	Check tof windows	
	IE cal after 200 particles	Shift+M while sampling,Calibtrate,Save,Exit	✓	SMPS s=4.1,a=0.41,350nm	
	Attach Zero filter to inlet		✓		
	Select tof masses to scan	Software,mz selection,left click on row	✓	14,16,30,43,44,46,48,57	
	Set thresholds In tof mode	Left click "SP thresholds" in left border	✓		
	Add m28 to tof list	Software,mz selection,left click on row	✓		
	General alteration,10 mins	Software, F3 to NonAutoSave	✓	Check tof windows	
	Close inlet		✓		
Data	Copy AutoSaveData folder	Source C:\AMS\AMSData\AutoSaveDate	✓		
		Dest C:\AMS\SAMSData\Summer05\flight	✓		
	Copy NonAutoSaveData folder	Source C:\AMS\AMSData\NonAutoSaveDate	✓		
		Dest C:\AMS\SAMSData\Summer05\flight	✓		
	Copy AMSLogFiles folder	Source C:\AMS\AMSData\AMSLogFiles	✓		
		Dest C:\AMS\SAMSData\Summer05\flight	✓		
	Copy CPC data	Source C:\UCPC\	✓		
		Dest C:\AMS\SAMSData\Summer05\flight	✓		
	Backup directory to DVD/laptop		✓		
	Delete AutoSaveData	Source C:\AMS\AMSData\AutoSaveDate	✓	FILES ONLY, NOT FOLDER	
	Delete NonAutoSaveData	Source C:\AMS\AMSData\AutoSaveDate	✓	FILES ONLY, NOT FOLDER	
	Delete AMSLogFiles	Source C:\AMS\AMSData\AutoSaveDate	✓	FILES ONLY, NOT FOLDER	
	Delete CPC data	Source C:\AMS\AMSData\AutoSaveDate	✓	FILES ONLY, NOT FOLDER	
ShutDown	Turn off Mulitplier & Balzers	Electronics box	✓		
	Turn off all Turbos and PC	Pump Controller Box			
	Shut Backing Valve	Back of rack	✓		
	Turn off heater,chopper,the rest	Electronics box, then power unit and Breakers	✓		

Flight Manager's Instrument Status Log

Flight No. **B**122 Date: 17/08/05

Instrument	Fitted	Operated	Instrument	Fitted	Operated
Navigation			**Cloud Physics**		
INU		**Y**	**Probes**		
XR5M GPS		**Y**	FFSSP		**Y**
Cruciform GPS	**Y**	**N**	PCASP		**Y**
Satcom C		**Y**	2D-P		**Y**
Satcom H		**Y**	2D-C		Y
Thermometers			Cloudscope	**N**	**N**
De-Iced Temp		**Y**	SID 1	**Y**	**Y**
Non De-Iced		**Y**	SID 2	**Y**	**Y**
Heimann	**N**		HVPS	**N**	
Hygrometers			CIP25	**Y**	**N**
G. Eastern		**Y**	CIP100	**Y**	**N**
J. Williams		**Y**			
Nevzorov		**Y**			
TWC		**Y**			
FWVS	**Y**	**N**	**Racks:**		
Radiometers			INC	**N**	**N**
Upper Clear	**Y**	**Y**	CCN / CNC		**Y**
" Red	**Y**	**Y**	CVI	**Y**	**Y**
" Silicon	**Y**	**Y**			
" JO1D	**Y**	**Y**	**Aerosol**		
Lower Clear	**Y**	**Y**	PSAP	**Y**	**N**
" Red	**Y**	**Y**	Nephelometer	**N**	
" Silicon	**Y**	**Y**	Filters	**Y**	**Y**
" JO1D	**N**		AMS	**Y**	**Y**
Large Radiometers					
TAFTS	**N**				
MARSS	**N**				
DEIMOS	**N**		**Others:**		
ARIES	**N**		NIR TDLAS	Y	N
SWS	N		2BT O3	Y	N
Chemistry			VACC	Y	N
Ozone	Y	Y	PEROXIDE	Y	N
SO2	Y	Y	Formaldehyde	Y	N
NOX	Y	Y	ADA	Y	N
CO	Y	Y	CPI	Y	N
ORAC	Y	N	NOxy	Y	Y
PAN	Y	N	PTRMS	Y	Y
PERCA	N	N	Bag Sampling	Y	N
WAS	Y	Y			

Faults / Incidents Log

Flight No. B122
Date: 17/08/05

Instruments

1. Core Chemistry CO calibration regulator diaphragm leak. Cylinder left off unless in use – needs fixing.
2. DFC intermittently reporting "Motion Alarm Area 1" on screen.
3. Data dropping out on display. In case this was also in horace, data logging system was restarted after horace was shut down. Drop-outs continued. Raw DRS readings seemingly unaffected. Eventually fixed problem by exchanging the optical disk – bad disk causing write errors and interrupting the lower-order processing.
4. Core Chem NOx / NO data unavailable from 11:50 to 12:45 owing to low flow at high altitude.

Aircraft

1. Preflight bin missing – eventually located in passenger search area
2. Flight Manager Comms box unable to transmit. Avalon fixed preflight by pressing and depressing 'voice' button. Problem recurred during flight (while speaking), switched to training and back to mission to clear problem.
3. Seemingly a problem with PTRMS and Core Chem comms boxes before takeoff. FM couldn't hear them and they couldn't hear him, fiddling with boxes seemed to cure the problem.

Satcom H Calls -

MISSING LOG SHEETS:

The following logs are not available for flight B122:

Log	Reason
De-brief	Sortie De-brief yet to be created by Keith Bower
CVI	No log is ever taken for CVI
NOxy	No log is ever taken for NOxy
PTrMS	No log is ever taken for PTrMS
CPI	Log only of interest to instrument operator so no copy left with FAAM

VIDEO RECORDINGS:

1 x Forward Facing Cameras
1 x Rearward Facing Cameras

8mm video recordings from this flight reside with :
Digital8 video recordings from this flight reside with :
8mm video recordings from this flight reside with FAAM (at 31 Oct 2005) :
Digital8 video recordings from this flight reside with FAAM (at 31 Oct 2005) :

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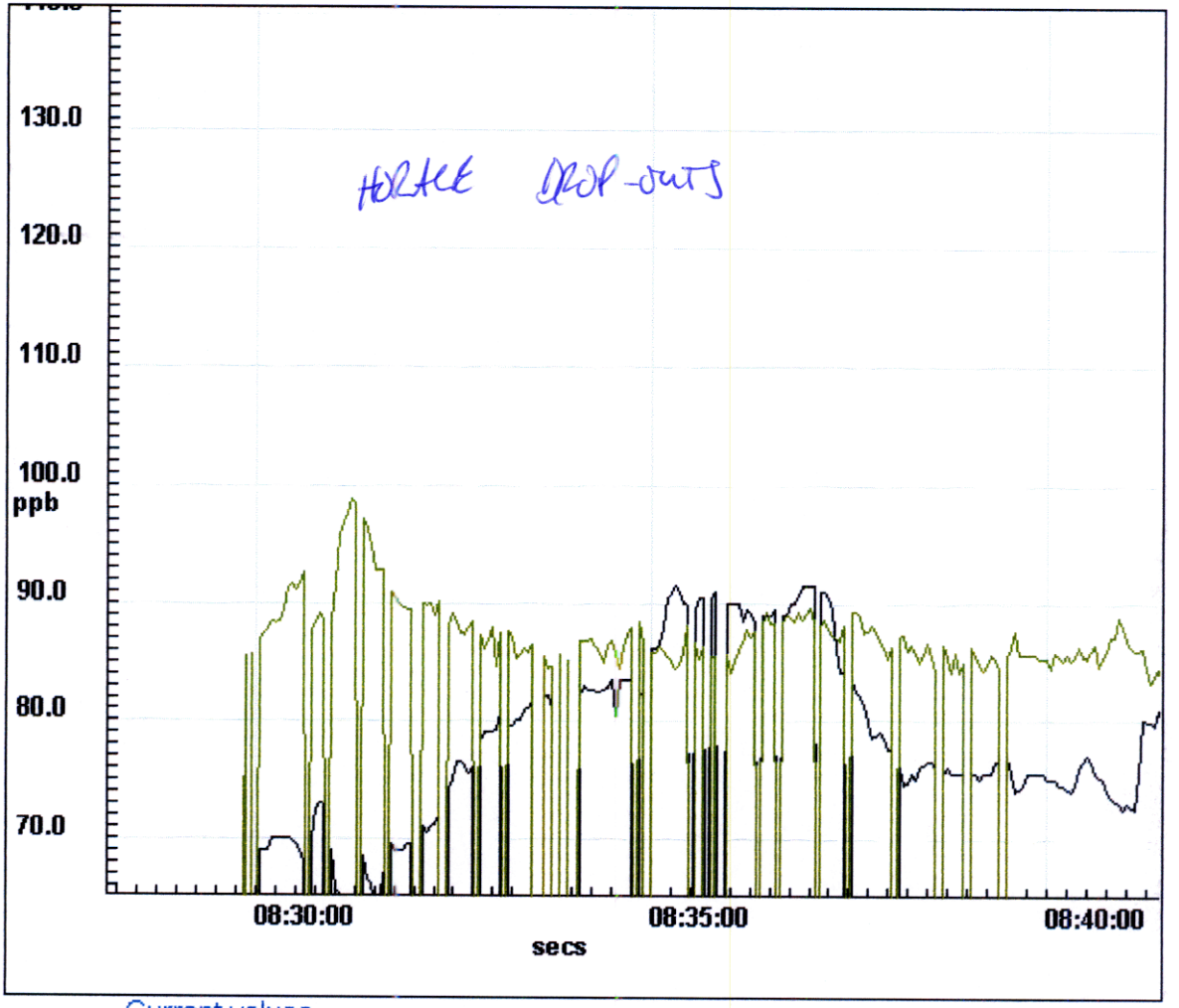
New plot, same times

Flight B122 08:43:21

Heading 347 deg Speed 323 knots Height 18.0kft Press 505mb
Lat 54.8N Long 2.8W Wind 7 ms-1/ 231 deg
Temp -9.65C Dewpoint -27.57C
From 08:09:24 to now



Current values

	TIME FROM MIDNIGHT	31401	secs	All
—	OZONE MIXING RATIO	71.48	ppb	
—	CO MIXING RATIO	87.11	pbb	